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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/059,153	01/31/2002	Masatoshi Yoshikawa	219054US2SRD	5984
22850	7590	12/05/2003		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER WATKO, JULIE ANNE	
			ART UNIT 2652	PAPER NUMBER

DATE MAILED: 12/05/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

10/059,153

Applicant(s)

YOSHIKAWA ET AL.

Examiner

Julie Anne Watko

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 6-12 and 14-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 13 and 18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Species A, drawn to Figs. 3A-8 (currently claims 1-5, 13 and 18), in Paper No. 7, filed November 10, 2003, is acknowledged. The traversal is on the ground(s) that serious burden is lacking because "the claims of the present application would have to be searched in a handful of sub-classes" (see page 1, last paragraph). This is not found persuasive because a different field of search need not be shown to show serious burden in an election of species requirement (see MPEP 803 and 808.01 (a)).

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1-5, 13 and 18 are hereby treated on the merits. Claims 1 and 18 are currently generic. Claims 6-12 and 14-17 are withdrawn from consideration as drawn to non-elected species.

### ***Priority***

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

4. The drawings are objected to because:

Figures 2A-B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Axis labels are missing from several plots; for example, axes are unlabeled in Figs. 2A-B and Fig. 8. It is unclear what quantities are being plotted.

X, Y and Z axes are labeled in Figs. 3A-B and 9; however, the orientation of these axes are inconsistent with the appearance of the product in these figures. Furthermore, the appearance of a left-handed coordinate system in Fig. 9 is inconsistent with the use of a right-handed coordinate system as shown in Figs. 3A-B.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 45a-b and 47a-b (see Fig. 10).

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "23" has been used to designate two distinct layers (see Fig. 14).

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 25 (see Fig. 14). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### ***Information Disclosure Statement***

6. The listing of references in the specification (see page 13, line 24, for example) is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a

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separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

7. The information disclosure statement of paper no. 3, filed January 31, 2002, has been considered.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 2-3 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 2 recites the limitation "both sides of structure" in line 3. There is insufficient antecedent basis for this limitation in the claims. It is unclear which two of six possible sides of the product are meant by this limitation.

b. Claim 3 recites the limitation "the magnetic shields" in line 2. There is insufficient antecedent basis for this limitation in claim 1, from which claim 3 depends.

c. Claim 13 recites the limitation "the both ends" in line 3. There is insufficient antecedent basis for this limitation in the claims.

d. Claim 13 recites the limitation "imparting magnetic anisotropies to the first and second magnetization free layers" in lines 6-8. This limitation is misdescriptive.

Magnetic anisotropy is a property of the materials of the first and second magnetization free layers; thus, the anisotropies are not imparted by any other layer. The Examiner

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suggests the limitation -- imparting magnetic bias [anisotropies] to the first and second magnetization free layers --.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-2, 4-5, 13 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Trindade (US Pat. No. 6643103 B1).

As recited in claim 1, Trindade shows a magnetoresistive head (see Fig. 4), comprising: a magnetoresistive film 220 including first and second (228 and 230) magnetization free layers, an intermediate layer 240 sandwiched between the first and second magnetization free layers, an underlayer ("seed layer (not shown)", see col. 6, lines 1-2) and a protective layer ("capping layer (not shown)", see col. 6, line 6), which are stacked in the order of the underlayer, the first magnetization free layer, the intermediate layer, the second magnetization free layer and the protective layer (see Fig. 6, see also col. 5, line 63-col. 6, line 6) and arranged to be substantially perpendicular to an air-bearing surface ("AIR BEARING", see Figs. 4 and 6), each magnetization direction of which first and second magnetization free layers is allowed to vary independently in response to a signal magnetic flux from a medium ("magnetizations of free layers 228 and 230 rotate in the presence of flux from a magnetic medium", see col. 6, lines 30-31), wherein first and second magnetization free layers produce a magnetoresistance effect in

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accordance with the magnetization directions thereof (see col. 4, line 58-col. 5, line 2); and a first electrode 252 electrically connected with (insofar as it directly contacts) the underlayer and a second electrode 250 electrically connected with (insofar as it directly contacts) the protective layer, the first and second electrodes allowing a current to flow in a direction substantially perpendicular to the plane ("CPP", see col. 5, line 3) of the magnetoresistive film.

As recited in claim 2, Trindade shows a pair of magnetic shields (114 and 118, see Fig. 2) arranged on both sides (left and right sides in Fig. 4, upper and lower sides in Fig. 6) of structure of the first electrode, the magnetoresistive film and the second electrode.

As recited in claim 4, Trindade shows that the intermediate layer 240 is formed of a conductive nonmagnetic layer ("low resistivity metallic film such as W, Ti, Ta, or AlCu", see col. 5, lines 45-46).

As recited in claim 5, Trindade shows that the intermediate layer 240 is formed of at least one kind of metal selected from the group consisting of Be, Al ("AlCu", see col. 5, line 46), Mg, Ca, Cu ("AlCu", see col. 5, line 46), Au, Ag, Rh, Ru and Ir.

As recited in claim 13, to the extent understood, Trindade shows a pair of hard biasing films ("PM", see Fig. 7) arranged on the both ends, along a track width direction (left-right direction in Fig. 7), of the magnetoresistive film, including the first magnetization free layer 228, the intermediate layer 240 and the second magnetization free layer 230, and imparting magnetic bias to the first 228 and second 230 magnetization free layers in substantially the same direction (see arrows "M" in Fig. 7).

As recited in claim 18, Trindade shows a perpendicular (see col. 2, line 20; see also col. 7, line 4, "perpendicular recording medium") magnetic recording-reproducing apparatus,

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comprising: a perpendicular magnetic recording medium ("perpendicular recording media", see col. 2, line 20); and a magnetoresistive head (see teachings above for claim 1) arranged to face the perpendicular magnetic recording medium.

***Allowable Subject Matter***

12. Claim 3 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

13. Reasons for indicating allowable subject matter will be stated at such time as all claims become clear and definite.

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pinarbasi (US Pat. No. 6275362 B1) shows a magnetic read head having free layers "F" and "L", underlayer "SL" and protective layer "CAP" (see Fig. 12, for example). Zhu (US PAP No. 2002/0114111 A1) shows a high density magnetoresistive read head comprising shield layers (32 and 34), free layers (24 and 26), intermediate layer 22, antiferromagnetic layers (32 and 34; see Fig. 2), and electrode layers (28 and 30).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (703) 305-7742. The examiner can normally be reached on Mon&Tue until 2PM, Th until 5PM, Wed&Fri all day.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

Julie Anne Watko  
Primary Examiner  
Art Unit 2652

November 29, 2003  
JAW

A handwritten signature in black ink, appearing to read 'Julie Anne Watko', written in a cursive style.